

10 20 30 40 50 60 70 80 90 100 110 120 130

Os\_PAM1 MDRLVIPEPTNEVVRVEPRPARGELTLRNAMHTMPVAFRIQPAVRSRFAVRPHTGILLAPLAAVTVEVVYLASEGPGGGGAGRGEDAFLHLSVVPAGAAVREPVTALDSVNPEWFSARRKQVTVDSGIRACF

Zm\_PAM1 MDRLVIPEPSNEVVRVEPRQARGELTLRNAMHTMPVAFRIQPAVRGRFAVRPHTGILLAPLAAVTVEVVYLASEGPGSGSG--SRGEDAFLHLSVVPAGAAVKEPVTALDSVNPEWFSARRKQVTVDSGIRASF

Sb\_PAM1 MDRLVIPEPSNEVMIRVEPRQARGELTLRNAMHTMPVAFRIQPAVRGRFAVRPHTGILLAPLAAVTVEVVYLASEGPGSGSGSGSGRGGDAFLHLSVVPAGAAVKEPVTALDSVNPEWFSARRKQVTVDSGIRASF

Ph\_PAM1 MDRLLSLEPSNVVTVIRLEPGOKCSGVLTLRNVMYTMPVAFRIQPLNKKIRYSIRPQSGIISPLTTITILEIYHLPPNTTLPDSFPHCDDSLHLSVVPAGATAKDTSSTLNMVPSDFWTTKKKQVTFDSAIAKVMF

Sl\_PAM1 MDRLLTLEPSNVVTVIRLEPGOKCSGALTTLRNVMYTMPVAFRIQPVNKKIRYAIRPQSGIISPLTTITILEIYHLPPNTTLPSTPSPHSDHSLHLSVVPAGAAINNKAATSLDMVPIDWFTTKKKQVTFDSAIAKVMF

St\_PAM1 MDRLLTLEPSNVVTVIRLEPGOKCSGELTLRNVMYTMPVAFRIQPVNKKIRYTRIRPQSGIISPLTTITILEIYHLPPNTTLPSTPSPHSDHSLHLSVVPAGAAINNKAATSLDMVPIDWFTTKKKQVTFDSAIAKVMF

Vv\_PAM1 MDRLLSLEPSNLVAIRIEPGOKCYGELTLRNVMYTMPVAFRIQPMNKKMYTVKQMAIIAPLATITVEIYHLPPGSLLPNSFPHCDDSLHLSVVPAGAAVAVES-----VPNDWFTTKKKQVTFDSGIRIMF

Pt\_PAM1 MDRLLTLEPSNLVAIRIEPGOKCYGELTLRNVMYTMPVAFRIQALNKKTRYTIKQSGIISPLATITIEIYHLLSPGSLLPETFPFCEDSLHLSVVPAGAIKDATSSMDAVPIDWFTTRKKQVTFDSGIAKVMF

Rc\_PAM1 MDRLLSLEPSNLVAIRIEPGOKCYGELTLRNVMYTMPVAFRIQALNKKTRYTIKQSGIISPLATITIEIYHLLSTFLPETFPFCEDTFLHLSVVPAGAIKHPNTSNFVDPQDWFTARRKKQVTFDSGIAKVMF

Gm\_PAM1 MDRLIKVDPTNTVPRIIEPGOKCHQITTLRNVMYTMPVAFRIQSLIKTRYTLKQSGIISPLSTVTIEILYNLPGS-TLPHSFPSESDSLHLSVVPAGATVKEPSSMFESVPSDFWTTAKKKQVTFDSGIIKIF

Mt\_Vpy MDRLIKLDPSNLVIRIEVEGOKCLGKITLNNVMYTMPVAFRIQPLIKTRYTIKQSGIISPLASVIEIYHPGPNLPHSFPFSDSLHLSVLPAGAAIKEPSSMFDSPSDFWTTTKKKQVTFDSAIAKVMF

Pp\_PAM1 MDRLVCLD-VDEVRIPFALGKRVTFKQIKSLVAITPVAFKVTGPKKFGVKPHMGLKPLGHTTFDIVMHQF--YEVPEDFPVSRDKFMTTMMIPPEELPQISLA---TSLDWFSTKKRYKTVVNVKIRVIV

REPEAT 1 REPEAT 2 REPEAT 3 REPEAT 4

140 150 160 170 180 190 200 210 220 230 240 250 260 270

Os\_PAM1 VGAAGAARLVGAAGAEALREVLDSEPEWRAADAVDE-SGRTLLDLAVGLGRADIVQVLLLEYGADADKPSR--GRTPLETAAASGECILAEILLANGATPA-----GSDALHVAAAAGHNDVLKLLGKPASASPSSASSASFCSFSTSIDAAGR

Zm\_PAM1 VGASVAARLVGAAGAEALREVLDSEPEWRAADATDE-SGRTLLDLAVGLGRADIVQVLLLEYGADADKPSR--GRTPLETAAASGECILAEILLANGATPA-----GSDAIVHAAAAGHNDVLKLLIARPASASPSSSS--FSSSLTSIDAAGR

Sb\_PAM1 VGASVAARLVGAAGAEALREVLDSEPEWRAADATDE-SGRTLLDLAVSLGRADIVQVLLLEYGADADKPSR--GRTPLETAAASGECILAEILLANGATPA-----GSDAIVHAAAAGHNDVLKLLGKPPASASPSSSSASFSSSTSIDAAGR

Ph\_PAM1 VGSPVLCYLVKKGYMDEIRREVLEKSDTTWKSVDVSINF-EGQTLHLHAISQGRDPIVOLLLEFGPNIEAHSR-SCSSPLEAASATGEALIVELLAKKAKTERTEF-SASGPIHLAAGNGHLEVLKLLILKGAN-----VNSLTGK

Sl\_PAM1 IGSPVLCYLVKKGYMDEIRREVLEKSDYCNCKPVDSDC-EGKTLHLHAISQSRADIVOLLLEFGPNIEAHSR-SCSSPLEAASATGEALIVELLAKKAKTERTEF-SASGPIHLAAGNGHLEVLKLLILNGAN-----VNALTK

St\_PAM1 IGSPVLCYLVKKGYMDEIRREVLEKSDYCNCKPADSDVF-EGQTLHLHAISQSRADIVOLLLEFGPNIEAHSR-SCSSPLEAASATGEALIVELLAKKAKTERTEF-SASGPIHLAAGNGHLEVLKLLILNGAN-----VNALTK

Vv\_PAM1 VGSPILAQLVVDGSMDEVREVLERSDSAWNANSVDG-HGQTLHLHAISQGRADIVOLLLEFEPDVEAQSR-SGSTPLEAASASGEALIVELLAKKAKTERTEF-SASGPIHLAAGNGHLEVLKLLILKGAN-----ADAITK

Pt\_PAM1 VGSPILAQLVMDGLMDEIRREVLEHSDPAWNPADAVDF-HGKTLHLHAISQGRADIVOLLLEFEPDVEAQSR-SGVSPLEAASASGEALIVELLAKKAKTERTEF-SASGPIHLAAGNGHLEVLKLLILKGAN-----VNALTK

Rc\_PAM1 VGSPILAQLVVDGSMDEVREVLERSDPSWNSADSDG-NGHTLHLHAISQGRDPIVOLLLEFEPDVEAQSR-SGVSPLEAASASGEALIVELLAKKAKTERTEF-SASGPIHLAAGNGHLEVLKLLILKGAN-----VDAVAK

Gm\_PAM1 VGSLILAQLVHNGSDIDEIRREVLEHSEHTWKAVDSVDQ-NGHTLHLHAISQSRDPIVOLLLEFNADVESKNR-TGETPLESACASGEELIVELLAKKAKTERTES-SSLGAIHLAAREGRREVLKLLILKGAN-----VDSLTK

Mt\_Vpy VGSQILLTQLVEDGSMDDIREVLEKSDPLWESVNSKDS-QGOTLHLHAISKTRDPIVOLLLEFEPKPIEAINS-VGSTPLEAASGSGESLIVELLAKKAKTERTES-SVFRPIHHSAREGHMEILLKLLILKGAN-----VDSLTK

Pp\_PAM1 VGGEILRLSAKGSRESIQDVLRSRG---TNVNSKDE-QGRTALSIALRGDPHIVQELLEAGAADVDPGSG-AGLTPLQEAFAFHSIAITVLLLRAKAKDEIPSH-PRWTALHLAASRGVGLRILKGAN-----ENAPDM

REPEAT 5 REPEAT 6 REPEAT 7 REPEAT 8

280 290 300 310 320 330 340 350 360 370 380 390

Os\_PAM1 DGKTPRLRLAAEAGRRDAVKALLAAGARADARCGA-DGGTALHAAARRQDEVIARLILANGGTAARVDA-AGRTAFETIAEECHGGIMDFLGLGEA-ILAAARKGEARAVRRAADGGASVEGRDA

Zm\_PAM1 DGKTPRLRLAAEAGRRDAVKALLAAGARADARCGA-DGATALHAAARRQDEAVARLILSHGGTASVRDV-AGRTAFETIAEECHGGIMDFLGLGEA-ILAAARKGEVRVRRRAADGGASVEGRDA

Sb\_PAM1 DGKTPRLRLAAEAGRRDAVKALLAAGARADARCGT-DGGTALHAAARRQDEAVARLILSHGGTATVRDV-AGRTAFETIAEECHGGIMDFLGLGEA-ILAAARKGEVRVRRRAADGGASVEGRDA

Ph\_PAM1 DGSSTALHLAVEERRRDCARLLLANGARADICSTG-NGDTPHLHIAAGLGDEHMMVRVLQKGAEKYRNK-YGRTAYDVAABHGNKLPDALRLGDS-LCVAARKGEVTVQRLLENGASINGRQ

Sl\_PAM1 DGN TALHIAVEEGRDCVRVLLANGARADARNEG-NC DTPHLHIAAGLGDEHMMVRVLQKGAEKNRNK-YGRTAYDVAABHGNKLPDALRLGDS-LCVAARKGEVTVIQRLLENGALINGCDQ

St\_PAM1 DGN TALHIAVEEGRDCVRVLLANGARADARNEG-NC DTPHLHIAAGLGDEHMMVRVLQKGAEKNRNK-YGRTAYDVAABHGNKLPDALRLGDS-LCVAARKGEVTVIQRLLENGASINGRQ

Vv\_PAM1 DGN TALHLSAMERRRDCSRLLLASGARADVRNK--NGDTPHLHIAAGLGDEHMMVKLLQKGANKDRNK-SGRTAYDVAABYGHTRLYDALSLGDN-LCAARKGEVTVIHKLENGAINGRQ

Pt\_PAM1 DGN TALHLAVEERRRDCARLLLASGAKADIRNNG-DGDTPHLHIAAGLGDEHMMVKLLHKGANKDRNK-NGRTAYDVAABHGHARLPDALRLGDS-LCIAARKGEVTVINRLLENGAINGRQ

Rc\_PAM1 GGF TALHMAVEERRRDCARLLLASGAKADIRNAS-EGDTPHLHIAAGLGDEHMMVKLLQKGANKDRNK-NGRTAYDVAABYGHARLPDALRLGDS-LCIAARKGEVTVITLKLENGAINGRQ

Gm\_PAM1 DGY TALHLAVREGSRDCARLLLANNARTDIRDSR-DGDTCLHVAAGVDESMVKLLLNKGANKDRVNF-NGRTAYDVAABKHARVPDALRLGDS-LCVAARKGEVTVIQRLLEGGAVVDGRQ

Mt\_Vpy DGN TSLHLAVEEKRDCARLLLANGARTDVNRMR-EGDTPHLHIAAGLGDEHMMVKLLHKGATKYRNK-LGRTAFDVAABHGNKLPDALRLGDN-LCAARKGEVTVIQKVLESQGVINGRQ

Pp\_PAM1 DFRTPHLHAAVTEGHTRAAILLLOHGADLVQSI--DGRTPHLHCAALQGHLSVIELLIDWGAQKEKDC-EGKTPFELAVESGHTVILDPILLQF-LHKAAREGNIQAVQRCILLOGLVNSCQ

REPEAT 9 REPEAT 10 REPEAT 11

400 410 420 430 440 450 460 470 480 490 500 510 520 530

Os\_PAM1 HGWTPLMRAAFKGRADTVRDLDVRGADMDATDA-EGYTALHCAAEAGRADVDLLLLKSGANAKTTTV-KGRSAAEVAAGGSKVVRLLKAGGVGRKEVA-----EKTSPAADVKGAGSLDRRRGRKGGSGAIRFGGGKDFETAAVAVGWSH

Zm\_PAM1 HGWTPLMRAAFKGRADTVRDLDVRGADMDAADA-DGYTALHCAAEAGRADVDLLLLKNGANVAKMTV-KGRTAADAATASGKSQVVRLLDKATIMQDVS-----EKVAPA--VAKGGSMDRKRRAKGGSGAIRFGGGKEGFEAAVTVGWSH

Sb\_PAM1 HGWTPLMRAAFKGRADTVRDLDVRGADMDAADA-EGYTALHCAAEAGRADVDLLLLKNGANVAKMTV-KGRTAADAATASGKSQVVRLLDKASVMVQDVS-----KVAPA--VAKGGSMDRKRRAKGGSGAIRFVGKKEGFEAAVTVGWSH

Ph\_PAM1 HGWTALHRAAFKGRVEVVKTLIENGIDINAKDE-DGYTALHCAVESGHVDVALLVKKGADIDSRITN-KGVTPLRIAESLKYSGLTRVIMQNGNKAQEVGA-KLEMNIAKSYGKMTKEVEIIGSVKKRSHVNKSSVR--RSSIDRT-I

Sl\_PAM1 HGWTALHRAAFKGRVEVVKTLIENGIDINAKDE-DGYTALHCAVESGHVDVALLVKKGADIDSRITN-KGVTPLRIAESLKYSGLTRVIMQNGNKAQEVGA-KLEMNIAKSYGKMTKEVEIIGSVKKRSHVNKSSVR--RSSIDRT-I

St\_PAM1 HGWTALHRAAFKGRVEVVKTLIENGIDINAKDE-DGYTALHCAVESGHVDVALLVKKGADIDSRITN-KGVTPLRIAESLKYSGLTRVIMQNGNKAQEVGA-KLEMNIAKSYGKMAKDVEIIGSVKKRSHVNKSSVR--RSSIDRT-VPL

Vv\_PAM1 HGWTALHRAAFKGRMEAVKALIEKVVIDAREE-DGYTALHCAVESGHVDVIELLVKKGADVEARTN-KGVTALQIAESLHNYGLTVRLSNVGAKEGVAQ--VPAPAPIPFGNGMLGAXEAHDQLGWPKKNRSRAVHSSFDRSSTPMAVL

Pt\_PAM1 HGWTALHRAAFKGTDAVRVLEIEKVVIDAKDE-DGYTALHCAVESGHVDVIELLVKKGADVEARTN-KGVTALQIAESLHNYGLTVRLIHGGAAGDVGTV--LVVPALHSPFRNGMAGKEVETKPM---KKRPLRARTLRGSFDRA-MPLAVL

Rc\_PAM1 HGWTALHRAAFKGNVEVVRTLIDKVIDVAKDE-DGYTALHCTVESGHVDVIELLVKKGADIEARTN-KGVTALQIAESLHNYGVISRLVIRSGAAKDVIMQ--LAAPVHQLPFGKGAGATEAE KTV---KKRQPRARPLRGSFDRS-TPLAVL

Gm\_PAM1 HGWTALHRAAFKGRVEAVRALLERVIDEARE-DGYTALHCAVEAGHADVAEVLVKKRGVDVEARTN-KGVTALQIAEALGYGGIARLLG-AAAGHVAEGE-----QQSVLGEMKKEKKNK--LGRRREREIRGSFDRS-MPLPVL

Mt\_Vpy NGWTSLHRAAFKGRMDAARFLVEKVIDLDAKDE-DGYTALHCAAESGHADVTEFLVKKGADVEARTN-KGVSALQIVESLNYVGITRILVNGASAREGLGE-KPPSAPSKIPFGRKVESGSMVTMK---KMSSRTALRGSFDRS-MPLAVL

Pp\_PAM1 HGFTALHRAAFKGHADVLVVLDDHGAEVNASDR-EGYTALHCAAISGHIADVDVLLQHGADVNSRCL-KGSTPLHVSSAMNFVDVVCLLLDYSADRALDGR-----TPFDIAVESRNDQLLPVLNLQDEDDDGASELCPPLATISLKGKEILI